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EXAMINER	
ELLIOTT IV, BENJAMIN H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,350	SCHWOERER, LUDWIG	
	Examiner	Art Unit	
	BENJAMIN ELLIOTT	2474	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2010 and 12 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-34 have been examined. Claim 34 has been canceled. Claims 1-33 are pending.

Response to Amendment

2. In response to the amendments received in the Office on 2/11/2010, the objection to the Specification has been withdrawn.

3. In response to the amendments received in the Office on 2/11/2010, the rejection of Claim 33 under 35 U.S.C. § 101 has been withdrawn.

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 29-33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

5. Claims 2-28 objected to because of the following informalities: claims recite "an apparatus according to…" Examiner respectfully suggests amending to recite "*the* apparatus according to…" Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,359,938 B1 to Keevill et al. (hereinafter **"Keevill"**), in view of non-patent literature document "Fast Scattered Pilot Synchronization for DVB-T and DVB-H" to Schwoerer et al. (hereinafter **"Schwoerer"**), published September 24, 2003 in Proc. 8th International OFDM Workshop, Hamburg, Germany.

Regarding Claim 1, Keevill discloses **an apparatus comprising: an apparatus configured to receive a multi-carrier transmission, wherein the multi-carrier transmission comprises various symbols, each symbol comprising a plurality of carriers** (Keevill: Abstract; Col. 6, lines 39-43. An accumulation of phase errors is made between first and second symbols containing a plurality of carriers. Col. 4, lines 43-45), **an accessor configured to access at least one symbol** (Keevill: Col. 8, lines 12-15. Pilot carriers are transmitted at a different power from data carriers. Col. 4, lines 43-45. A digital

receiver is used to receive the multi-carrier signals. Col. 4, lines 30-33; receiver receives symbols.), **a block configured to establish power accumulation sums for possible pilot carriers of the symbol** (Keevill: Col. 8, lines 20-24. Magnitudes that correlate to powers of scattered pilot carriers are accumulated in accumulators. Col. 4, lines 43-45. A digital receiver is used to receive the multi-carrier signals.), **a block configured to determine a power accumulation sum maximum of the sums indicating a pilot carrier position** (Keevill: Col. 8, lines 27-32. Accumulators add the absolute values of the powers and store the sums in accumulators. Col. 8, lines 34-37. The identity of the accumulator containing the highest values of magnitudes correlating to powers of carriers is known. Col. 4, lines 43-45. A digital receiver is used to receive the multi-carrier signals.).

Keevill discloses an estimation of frequency response of a channel wherein pluralities of scattered pilot carriers are transmitted at a power that differs from the transmitted power of the data carriers (Keevill: Col. 8, lines 9-15). Keevill discloses the multicarrier signal comprises a stream of symbols (Keevill: Col. 4, lines 45-48). Keevill does not explicitly disclose a distinguishable power based *pattern* for pilot signals in at least one symbol.

Schwoerer discloses a method for finding the position of scattered pilots within an OFDM symbol (Schwoerer: Page 1, Col. 1, 3rd ¶). Schwoerer discloses a means for **establishing a distinguishable power based pattern for pilot carriers in at least one received symbol** (Schwoerer: Figure 3; scattered pilot positions are located every four OFDM symbols. Page 3, Col. 1; using power accumulation sums (formulas), a distinguishable power-based pattern is

discerned for the at least one symbol.). Based on the pattern, Schwoerer discloses power accumulation sums are established (Schwoerer: Page 3, Col. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Further, Keevill discloses **the mobile terminal of Claim 29** (Keevill: Col. 1, lines 22-28), **the sub-assembly of Claim 30** (Keevill: Figures 10 and 11), **the chipset of Claim 31** (Keevill: Figure 12), **the method of Claim 32** (Keevill: Col. 4, lines 29-32), and **the memory storing a computer program code of Claim 33** (Keevill: Col. 1, lines 12-17; the invention includes computer program code.). Claims 29-33 correspond to claim 1. Therefore, claims 29-33 are rejected for the same reasons as set forth for claim 1 presented above. Please see examiner's comments with respect to claims 1 above.

Regarding Claim 2, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein one of the possible pilot carriers is configured to comprise the maximum in accordance with the predetermined pattern for the pilot carriers within the symbol** (Keevill: Col. 8, lines 27-32. Accumulators add the absolute values of the powers and store the sums in accumulators. Col. 8, lines 34-37. The identity of the accumulator

containing the highest values of magnitudes correlating to powers of carriers is known.).

Schwoerer discloses a method for finding the position of scattered pilots within an OFDM symbol (Schwoerer: Page 1, Col. 1, 3rd ¶). Schwoerer discloses a means for **establishing a distinguishable power based pattern for pilot carriers in at least one received symbol** (Schwoerer: Figure 3; scattered pilot positions are located every four OFDM symbols. Page 3, Col. 1; using power accumulation sums (formulas), a distinguishable power-based pattern is discerned for the at least one symbol.). Based on the pattern, Schwoerer discloses power accumulation sums are established (Schwoerer: Page 3, Col. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 3, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the position of the possible pilot carriers is configured to be based on the pattern in such a way that carrier indexes having a pilot in a matrix of certain number of symbols are configured to be selected, and the corresponding carrier index position within the accessed symbol is accordingly configured to be selected** (Schwoerer: Page 3, Col. 1;

four correlations are performed to determine position. Figure 3 for matrix of position. SPRP is used for current position.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 4, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein every predetermined carrier of the symbol is configured to be selected for the block configured to establish the power accumulation sums** (Keevill: Col. 5, lines 60-67; Col. 6, lines 1-9. An accumulation of sums is made based on the predetermined magnitude of the carriers, and a proper channel response is chosen.).

Regarding Claim 5, Keevill in view of Schwoerer discloses **an apparatus according to claim 4, wherein every fourth carrier of the symbol is configured to be selected for the block configured to establish the power accumulation sums** (Keevill: Col. 35, lines 47-49. Phase differences of carriers are computed based on every fourth character.).

Regarding Claim 6, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the distinguishable power based pattern comprises boosted pilot carriers compared to data carriers of the symbol**

(Keevill: Col. 30, lines 32-34. The pilot carrier amplitudes are 4/3 that of data carrier amplitudes.).

Regarding Claim 7, Keevill in view of Schwoerer discloses **an apparatus according to claim 6, wherein the pilots are boosted in amplitude of 4/3 compared to the data carriers** (Keevill: Col. 30, lines 32-34. The pilot carrier amplitudes are 4/3 that of data carrier amplitudes.).

Regarding Claim 8, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the block configured to establish power accumulation sums further comprises:**

a block configured to perform a first power accumulation sum for first possible pilot carrier positions of the symbol (Schwoerer: Page 3, Col. 1; Formula $C_1(n)$)**, a block configured to perform a second power accumulation sum for second possible pilot carrier positions of the symbol** (Schwoerer: Page 3, Col. 1; Formula $C_2(n)$)**, a block configured to perform performing a third power accumulation sum for third possible pilot carrier positions of the symbol** (Schwoerer: Page 3, Col. 1; Formula $C_3(n)$)**, a block configured to performing a fourth power accumulation sum for fourth possible pilot carrier positions of the symbol** (Schwoerer: Page 3, Col. 1; Formula $C_4(n)$)**, and a block configured to detect the power accumulation maximum magnitude from the first, second, third, and fourth power accumulation sums for indicating the current scattered pilot raster position** (Schwoerer: Page 3, Col. 1; Formula $C_{max}(n)$).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 9, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the first power accumulation sum is adapted to be calculated based on the following formulae:**

$PS_1(n) = \Sigma\ p=0$ to p_{max} $S(n,12p+12)\cdot S^*(n,12p+12)$, wherein S(n,c) denotes c-th subcarrier of the current symbol and p_{max} depends on the used mode of transmission (Schwoerer: Page 3, Col. 1; Formula $C_1(n)$).

Regarding Claim 10, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the second power accumulation sum is adapted to be calculated based on the following formulae:**

$PS_2(n) = \Sigma\ p=0$ to p_{max} $S(n,12p+3)\cdot S^*(n,12p+3)$, wherein S(n,c) denotes c-th subcarrier of the current symbol and p_{max} depends on the used mode of transmission (Schwoerer: Page 3, Col. 1; Formula $C_2(n)$).

Regarding Claim 11, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the third power accumulation sum is adapted to be calculated based on the following formulae:**

$PS_3(n) = \Sigma\ p=0$ to p_{max} $S(n,12p+6)\cdot S^*(n,12p+6)$, wherein S(n,c) denotes c-th subcarrier of the current symbol and p_{max} depends on the used mode of transmission (Schwoerer: Page 3, Col. 1; Formula $C_3(n)$).

Regarding Claim 12, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the fourth power accumulation sum is adapted to be calculated based on the following formulae: $PS_4(n) = \Sigma\ p=0$ to p_{max} $S(n,12p+9)\cdot S^*(n,12p+9)$, wherein S(n,c) denotes c-th subcarrier of the current symbol and p_{max} depends on the used mode of transmission** (Schwoerer: Page 3, Col. 1; Formula $C_4(n)$).

Regarding Claim 13, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the second power accumulation sum is adapted to be calculated based on the following formulae: $PS_1'(n) = \Sigma\ p=0$ to p_{max} $S(n,12p)\cdot S^*(n,12p)$, wherein S(n,c) denotes c-th subcarrier of the current symbol and p_{max} depends on the used mode of transmission** (Schwoerer: Page 3, Col. 1; 2nd Formula $C_1(n)$).

Regarding Claim 12, Keevill in view of Schwoerer discloses **an apparatus according to claim 8, wherein the block configured to detect the power accumulation maximum magnitude is adapted to be calculated based on the following formulae: $PS_{max}(n) = max(PS_p(n))$; $p\epsilon\{1,2,3,4\}$, wherein $PS_p(n)$ denotes the first, second, third, and fourth power accumulation sums, p is adapted to determine pilot carrier positions for identifying a certain symbol** (Schwoerer: Page 3, Col. 1; Formula $C_{max}(n)$)**, and a current scattered pilot**

raster position (SPRP) is adapted to be found based on the following formulae:

SPRP(n) = arg max $PS_p(n)$); pε{1,2,3,4}, wherein $PS_p(n)$ denotes the first, second, third, and fourth power accumulation sums, p is adapted to determine pilot carrier positions for identifying a certain symbol (Schwoerer: Page 3, Col. 1; Formula SPRP(n)).

Regarding Claim 15, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the accessor configured to access comprises:**

a block configured to obtain a first symbol of the transmission (Keevill: Col. 8, lines 12-15. Pilot carriers are transmitted at a different power from data carriers. Col. 4, lines 43-45. A digital receiver is used to receive the multi-carrier signals. Col. 4, lines 30-33; receiver receives symbols.)**, a block configured to obtain another symbol in relation to the first symbol** (Keevill: Col. 6, lines 54-59. An accumulator is coupled to memory allowing phase differentials to be compared between a second symbol and a first symbol.).

Regarding Claim 16, Keevill in view of Schwoerer discloses **an apparatus according to claim 15, wherein the accessed symbols comprise currently received symbol and certain predetermined another symbol preceding or following the currently received symbol** (Keevill: Col. 29, lines 17-22. Newly accumulated values of carriers are stored with known values. The carrier with the largest peak is the first active carrier in the symbol.).

Regarding Claim 17, Keevill in view of Schwoerer discloses **an apparatus according to claim 15, wherein the accessed symbols comprise currently received symbol and certain predetermined another symbol preceding or following the currently received symbol** (Keevill: Col. 29, lines 17-22. Newly accumulated values of carriers are stored with known values. The carrier with the largest peak is the first active carrier in the symbol.).

Schwoerer discloses **so that the correspondence pattern is configured to be established between pilot carriers of the symbols for possible carrier positions within the matrix of the symbols** (Schwoerer: Page 3, Col. 1; four correlations are performed to determine position. Figure 3 for matrix of position. SPRP is used for current position.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 18, Keevill in view of Schwoerer discloses **an apparatus according to claim 15, wherein the certain predetermined another symbol comprises a consecutive symbol preceding or following the currently received symbol** (Keevill: Col. 8, lines 51-56. A mean phase

difference is conducted between corresponding pilot symbols of successive symbols of the digital signal.).

Regarding Claim 19, Keevill in view of Schwoerer discloses **an apparatus according to claim 15, wherein the block configured to establish power accumulation sums further comprises:**

a block configured to establish power accumulation sums for possible pilot carriers of the first symbol (Keevill: Col. 8, lines 20-24. Magnitudes that correlate to powers of scattered pilot carriers are accumulated in accumulators. Col. 4, lines 43-45. A digital receiver is used to receive the multi-carrier signals.), **and the apparatus further comprises:**

a block configured to establish another power accumulation sums for possible pilot carriers of the another symbol (Keevill: Col. 8, lines 34-41. A second accumulator corresponding to a second carrier wherein sums are stored is compared to a first accumulator.),

and a block configured to establish cumulated power sums from the power accumulation sums and the another power accumulated sums (Keevill: Col. 8, lines 34-41. The receiver contains accumulators for storing sums.),

and the a block configured to determining the power accumulation sum maximum comprises:

a block configured to determining the power accumulation sum maximum of the cumulated power sums for indicating the current pilot carrier position (Keevill: Col. 8, lines 34-36. The accumulator storing the highest accumulated sums is identified. Also see Schwoerer, Page 3, Col. 1.).

Regarding Claim 20, Keevill in view of Schwoerer discloses **an apparatus according to claim 19, wherein the block configured to establish another power accumulation sums further comprises:**
a block configured to perform a first another power accumulation sum for first possible pilot carrier positions of the another symbol, a block configured to perform a second another power accumulation sum for second possible pilot carrier positions of the another symbol, a block configured to perform a third another power accumulation sum for third possible pilot carrier positions of the another symbol, a block configured to perform a fourth another power accumulation sum for fourth possible pilot carrier positions of the another symbol (Keevill: Figure 43; Figure 48; Col. 35, lines 24-31 and lines 35-50. From Figure 43, the accumulation block, 600, accumulates sums of the current symbol minus the symbol that preceded it by 4 (this correlates to a power accumulation sum of first, second, third, and fourth order). From Figure 48, a slope of best fit is determined from these accumulation sums every fourth symbol. Also see Schwoerer, Page 3, Col. 1.).

Regarding Claim 21, Keevill in view of Schwoerer discloses **an apparatus according to claim 19, wherein for the a block configured to establish cumulated power sums from the power accumulation sums and another power accumulation sums, the respective power accumulation sums of the first and the another symbol are configured to be selected in such a way that the pilot carriers of the symbols have a correspondence for the respective sums** (Keevill: Col. 8, lines 33-41 and lines 42-46. Sums are

stored in accumulators. Intervals between first and second carriers are determined. Positions of the first and second carriers are then compared. Also see Schwoerer, Page 3, Col. 1.).

Regarding Claim 22, Keevill in view of Schwoerer discloses **an apparatus according to claim 20, wherein the block configured to establish cumulated power sums from the power accumulation sums and the another power accumulated sums comprises:**
a block configured to perform a first cumulated power sum for the first power accumulation sum of the first symbol and the fourth another power accumulation sum of the another symbol, a block configured to perform a second cumulated power sum for the second power accumulation sum of the first symbol and the first another power accumulation sum of the another symbol, a block configured to perform a third cumulated power sum for the third power accumulation sum of the first symbol and the second another power accumulation sum of the another symbol, and
a block configured to perform a fourth cumulated power sum for the fourth power accumulation sum of the first symbol and the third another power accumulation sum of the another symbol (Keevill: Figure 43; Figure 48; Col. 35, lines 24-31 and lines 35-50. From Figure 43, the accumulation block, 600, accumulates sums of the current symbol minus the symbol that preceded it by 4 (this correlates to a power accumulation sum of first, second, third, and fourth order). From Figure 48, a slope of best fit is determined from these accumulation sums every fourth symbol. Also see Schwoerer, Page 3, Col. 1.).

Regarding Claim 23 Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the multi-carrier transmission comprises OFDM transmission uses time-slicing** (Keevill: Col. 11, lines 21-23. A difference signal is found when two samples are sent separated by a time interval (time-sliced) equal to a fast Fourier transform that is applied.)**, the symbol comprises OFDM symbol** (Keevill: Col. 33, lines 58-61. The phase slope is determined from the phase difference of OFDM symbols.), **and the plurality of carriers comprise data carriers and scattered pilot carriers** (Keevill: Col. 6, lines 22-26. Channel estimation is performed using pilot carriers and data carriers.).

Regarding Claim 24, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the multi-carrier transmission comprises time slicing based power saving based on bursts, and a synchronization of the apparatus into the bursts is configured to be based on the indicated pilot position for finding index of the received symbol** (Schwoerer: Page 1, Col. 1, last paragraph through Col. 2, Section II, first paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded

nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 25, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the multi-carrier transmission comprises DVB transmission using time slicing based on bursts, and synchronization into the bursts is configured to be based on the indicated pilot position for finding an indication indicating the OFDM symbol** (Schwoerer: Page 1, Col. 1, last paragraph through Col. 2, Section II, first paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver of Keevill with the functionality of distinguishing a power-based pattern of an OFDM symbol as taught by Schwoerer since all the claimed elements were known at the time the invention was made, and combining these known elements would have yielded nothing more than predictable results, i.e., reducing synchronization time, before channel estimation, of an OFDM frame (Schwoerer: Page 1, Col. 1, 3rd ¶).

Regarding Claim 26, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein the apparatus further comprises: a Fast Fourier Transform (FFT) block configured to FFT transform the received transmission for obtaining the symbol** (Keevill: Col. 11, lines 21-25. A difference signal is determined for samples separated by a period of time equal to the size of the fast Fourier transform applied.),

accumulator block configured to accumulating power accumulation sum

results (Keevill: Col. 8, lines 20-24. Magnitudes that correlate to powers of scattered pilot carriers are accumulated in accumulators. Col. 4, lines 43-45. A digital receiver is used to receive the multi-carrier signals.),

and Channel Estimation block (CHE) for further continuing the reception of the transmission (Keevill: Col. 5, lines 60-61. The receiver provides for channel estimation and correction.).

Regarding Claim 27, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein computational resources for performing the operations of at least one of the means comprises the same computational resources which are configured to perform a post-FFT acquisition in the receiver** (Figure 14, Col. 18, lines 29-32. Acquisition and control of the FFT window is performed in block 166. FFT computations are performed in the FFT calculation circuitry block 168.).

Regarding Claim 28, Keevill in view of Schwoerer discloses **an apparatus according to claim 1, wherein a buffer of the apparatus is configured to contain all said blocks** (Keevill: Col. 12, lines 18-21. Samples are buffered for an active interval in a memory.).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN ELLIOTT whose telephone number is (571)270-7163. The examiner can normally be reached on Monday thru Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/
Supervisory Patent Examiner, Art Unit 2474

BENJAMIN ELLIOTT
Examiner
Art Unit 2474